

**Unit 4 Key Terms**

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| Key Term | Definition |
| Annotate | To add explanatory notes to a drawing. |
| Assembly | A group of machined or handmade parts that fit together to form a self-contained unit. |
| Assembly Drawing | A drawing that shows parts of an item when assembled. |
| Cartesian Coordinate System | A rectangular coordinate system created by three mutually perpendicular coordinate axes, commonly labeled X, Y, and Z. |
| Component | A part or element of a larger whole. |
| Computer-Aided Design or Computer-Aided Drafting (CAD) | 1. When used in the context of design: the use of a computer to assist in the process of designing a part, circuit, building, etc. 2. When used in the context of drafting: the use of a computer to assist in the process of creating, storing, retrieving, modifying, plotting, and communicating a technical drawing. |
| Degree of Freedom | The variables by which an object can move. In assemblies, an object floating free in space with no constraints to another object can be moved along three axes of translation and around three axes of rotation. Such a body is said to have six degrees of freedom. |
| Design Brief | A written plan that identifies a problem to be solved, its criteria, and its constraints. The design brief is used to encourage thinking of all aspects of a problem before attempting a solution. |
| Design Statement | A part of a design brief that challenges the designer, describes what a design solution should do without describing how to solve the problem, and identifies the degree to which the solution must be executed. |
| Domain | The set of input values of a function. |
| Extrusion  | 1. A manufacturing process that forces material through a shaped opening. 2. A modeling process that creates a three-dimensional form by defining a closed two-dimensional shape and a length. |
| Function | 1. A relationship from one set (called the domain) to another set (called the range) that assigns to each element of the domain exactly one element of the range. 2. The action or actions that an item is designed to perform. |
| Geometric Constraint | Constant, non-numerical relationships between the parts of a geometric figure. Examples include parallelism, perpendicularity, and concentricity. |
| Marketing | The promotion and selling of products or services. |
| Mathematical Modeling | The process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. |
| Mock-up | A model or replica of a machine or structure for instructional or experimental purposes. Also referred to as an Appearance Model.  |
| Model | A visual, mathematical, or three-dimensional representation in detail of an object or design, often smaller than the original. |
| Origin | A fixed point from which coordinates are measured. |
| Packaging | Materials used to wrap or protect goods. |
| Pattern | A repeated decorative design. |
| Physical Model | A physical representation of an object. Prototypes and appearance models are physical models. |
| Plane | A flat surface on which a straight line joining any two points would wholly lie. |
| Portfolio | A collection of documents selected for a particular purpose which may contain reflection on the contents of the documents or the related purpose. Varieties of portfolio types exist and are used for different purposes (e.g., project portfolio, course portfolio, longitudinal or growth portfolio, showcase portfolio).  |
| Prototype | A full-scale working model used to test and improve a design concept by making actual observations and necessary adjustments. |
| **Range** | The set of output values of a function. |
| **Revolution** | Creating a 3D solid or surface by revolving a 2D shape about an axis. |
| **Rotation** | Turning around an axis or center point. |
| **Round** | A rounded exterior blend between two surfaces. |
| Scale Model | An enlarged or reduced representation of an object that is usually intended for study purposes. |
| Scoring | Making an impression or crease in a box blank to facilitate bending, folding, or tearing. |
| **Solid** | A three-dimensional body or geometric figure. |
| Solid Modeling | A type of 3D CAD modeling that represents the volume of an object, not just its lines and surfaces. |
| Subassembly | An assembled part that is a part of a larger assembly. |
| Translation | Motion in which all particles of a body move with the same velocity along parallel paths. |
| **Working Drawings** | Drawings that convey all of the information needed to manufacture and assemble a design. |